

REMARKS

Applicant submitted an Amendment on May 15, 2003. This supplemental amendment is intended to provide additional comments in support of patentability.

Claims 1, 2, 7, 8, 18 and 19 were rejected under 35 USC 102 (b) as being anticipated by Wolf (USP 5,080,167).

Wolf '167 is directed to a "multi-heat exchanger" that is a mechanical integration of the engine cooling radiator and the condenser in a one unique module. The key structure of such module is that both condenser area and radiator area share the same fin element. This means that tube pitch is the same between radiator and condenser. However, as radiator coolant temperature is usually around 80 to 90 deg and a proper condensation in the AC system should be done under 65 deg, the multi-heat exchanger needs some technical solution to cut the thermal bridge between the condenser area and the radiator area. Typically, the condenser tubes and radiator tubes are separated; moreover, it is typical to reduce the fin surface in the connection area between condenser and radiator in order to reduce as much as possible the heat transfer from radiator to condenser.

In the system of Wolf '167, both condenser heat and radiator heat are rejected to the air through the fin, and the condenser and the radiator has a serial layout. In terms of heat resistance; this

In re ELLIOT, et al.
09/614,586

mean that the fresh air at the inlet of the front end of the car is first heated by the condenser and then heated by the radiator.

In the claimed invention, one key structural difference is that condenser tubes and radiator tubes have to be in contact. The condensation function is done by rejecting the AC Loop heat from the refrigerant to the coolant through the tubes contact. The heat is rejected afterward to the air through another radiator that is located in the front of the vehicle and that has the function to cool the coolant. Basically, no airflow is need for condensation if the AC Loop is used in refrigeration mode. The result is an improved contact between the radiator tubes and the coolant tubes, and an improved efficiency of the condensation. This structure and function is completely opposite to the Wolf module.

In this claimed invention, there is one mode in which we have circulation of the 3 fluids in the same time. It is the heating mode that requires use of the condenser as additional heating sources in order to increase the level of heat availability. But in this case the physical heat transfer scheme is:

- refrigerant -> coolant -> air
- or a parallel: refrigerant ->air and coolant -> air in the same time.

The serial heat transfer path described in Wolf patent is teach or render obvious the claimed invention at all because it prohibits the condensation function.


In re ELLIOT, et al.
09/614,586

The present invention could have a heat transfer function between radiator and condenser system even without air circulation but this arrangement is very difficult in the case of Wolf system.

One other important difference between the claimed invention and Wolf '167 is that when there is air circulation in Wolf system, the air stays normally outside the vehicle. In case of the claimed invention, this air is forwarded inside the cabin to be used for passenger comfort.

It is respectfully submitted that the application and claims are now believed to be in condition for allowance and notice to that effect is respectfully requested. Should the Examiner believe additional discussion would advance the prosecution of the present application, they are invited to contact the undersigned at the local telephone number listed below.

Respectfully submitted,

By: 
Matthew Stavish
Reg. N° 36,286

Liniak, Berenato & White
Suite 240
6550 Rock Spring Drive
Bethesda MD, 20817
Tel. (301) 896-0600
Fax. (703) 896-0607